What is claimed is:

1. A method of routing packets in a communications network, wherein the network comprises a plurality of nodes which are interconnected by parallel component links, the method comprising the steps of:

a) grouping said parallel component links into a bundled link; and

b) performing routing calculations according to a link state routing algorithm on using said bundled link as a unit of transmission medium.

2. The method of claim 1, wherein step (a) further comprises the step of creating a first database in which a plurality of bundled links are mapped to a plurality of component links, and step (b) further comprises the step of creating a second database in which a plurality of destination addresses are mapped to a plurality of bundled links.

3. The method of claim 2, further comprising the step of receiving data packets arriving on said parallel component links and routing the data packets based on said first and second databases.

4. The method of claim 2, further comprising the steps of:

downloading said first and second databases to a plurality of interface units connected to said parallel component links; and

receiving data packets arriving on said parallel component links at said interface units and routing the data packets based on said downloaded first and second databases.

5. The method of claim 1, wherein step (a) comprises the step of exchanging hello packets between a pair of said nodes via said parallel component links and creating said first database in a learning process based on contents of the exchanged hello packets.

6. The method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to different ones of said plurality of nodes.

7. The method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different bandwidths.

8. The method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different management groups.

9. The method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different link priorities.

10. The method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different light wavelengths.

11. The method of claim 1, wherein step (a) comprises the step of monitoring status of said parallel component links and grouping said parallel component links into said bundled link when there is a significant change in the monitored status.

12. The method of claim 7, wherein step (a) comprises the steps of maintaining a bundled link management table for storing a total bandwidth of said bundled link and grouping said parallel component links into said bundled link according to the stored total bandwidth, further comprising the step of defining a bundled link state according to said stored total bandwidth and performing step (b) according to the bundled link state and the stored total bandwidth.

13. The method of claim 5, wherein said bundled link is uniquely assigned an interface IP (internet protocol) address, and wherein said hello packets contain said interface IP address to all neighbor nodes to exchange interface IP addresses.

14. The method of claim 5, wherein said first database contains a node identifier identifying a neighbor node and a link identifier assigned by the neighbor node for identifying each of said parallel component links.

15. The method of claim 1, wherein each of said nodes is an optical cross-connect system and is arranged to send a signaling packet for establishing a wavelength path in said network, and wherein each of said

parallel component links is assigned a common link identifier and said signaling packet contains the common link identifier for allowing neighbor nodes to identify a component link which interconnects the neighbor nodes.

16. The method of claim 12, wherein step (a) comprises:

responsive to a link-up request, incrementing a number of component links grouped into said bundled link and increasing said by an amount corresponding to a bandwidth of a requested component link;

responsive to a link-down request, decrementing said number of component links and decreasing said by an amount corresponding to a bandwidth of a requested component link; and

adding a component link requested by the link-up request to said bundled link if the number of component links grouped into said bundled link is greater than zero and removing a component link requested by the link-down request from the bundled link if the number of component links grouped into the bundled link is equal to zero.

17. The method of claim 1, further comprising the steps of:

transmitting a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receiving said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.

18. A routing controller for routing packets in a communications network, wherein the network comprises a plurality of nodes which are interconnected by parallel component links, comprising:

a link manager for grouping said parallel component links into a bundled link; and

a routing module for performing routing calculations according to a link state routing algorithm using said bundled link as a unit of transmission medium.

19. The routing controller of claim 18, wherein the link manager creates a first database in which a plurality of bundled links are mapped to a plurality of component links, and said routing module creates a second database in which a plurality of destination addresses are mapped to a plurality of bundled links.

20. The routing controller of claim 19, wherein said link manager and said routing module are arranged to download said first and second databases to a plurality of interface units connected to said parallel component links to allows said interface units to translate header of data packets arriving on said parallel component links according to said downloaded first and second databases.

21. The routing controller of claim 19, wherein said link manager exchanges hello packets with a neighbor node via said parallel component links and creates said first database in a learning process based on contents of

the exchanged hello packets.

22. The routing controller of claim 18, wherein the link manager groups said parallel component links into a plurality of bundled links corresponding to different ones of said plurality of nodes.

23. The routing controller of claim 18, wherein the link manager groups the parallel component links into a plurality of bundled links corresponding to a plurality of different bandwidths.

24. The routing controller of claim 18, wherein the link manager groups the parallel component links into a plurality of bundled links corresponding to a plurality of different management groups.

25. The routing controller of claim 18, wherein the link manager groups the parallel component links into a plurality of bundled links corresponding to a plurality of different link priorities.

26. The routing controller of claim 18, wherein the link manager groups the parallel component links into a plurality of bundled links corresponding to a plurality of different light wavelengths.

27. The routing controller of claim 18, wherein the link manager monitors status of said parallel component links and groups said parallel component links into said bundled link when there is a significant change in

the monitored status.

28. The routing controller of claim 23, wherein the link manager groups said parallel component links into said bundled link according to a total bandwidth of the bundled link and defines a bundled link state according to the total bandwidth, and wherein the routing module performs said routing calculations according to the bundled link state and said total bandwidth of the bundled link.

29. The routing controller of claim 21, wherein said bundled link is uniquely assigned an interface IP (internet protocol) address, and wherein said hello packets contain said interface IP address to all neighbor nodes to exchange interface IP addresses.

30. The routing controller of claim 21, wherein said first database contains a node identifier identifying a neighbor node and a link identifier assigned by the neighbor node for identifying each of said parallel component links.

31. The routing controller of claim 28, wherein said link manager is arranged to:

increment a number of component links grouped into said bundled link in response to a link-up request,

increase said by an amount corresponding to a bandwidth of a component link requested by the link-up request,

decrement said number of component links in response to a link-down request,

decrease said by an amount corresponding to a bandwidth of a component link requested by the link-down request,

add a component link requested by the link-up request to said bundled link if the number of component links grouped into said bundled link is greater than zero, and

remove a component link requested by the link-down request from the bundled link if the number of component links grouped into the bundled link is equal to zero.

32. The routing controller of claim 18, wherein the link manager is arranged to:

transmit a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receive said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.

33. A router for routing packets in a communications network, wherein the network comprises a plurality of said router which are interconnected by parallel component links, comprising:

a routing controller;

a plurality of interface units connected to said parallel component links; and

a switch for switching an inbound hello packet from said interface units to said routing controller and an outbound hello packet from the routing controller to said interface units and switching a data packet between said interface units,

said routing controller grouping said parallel component links into a bundled link according to a link-up or a link-down request and producing a first database and performing routing calculations according to a link state routing algorithm using said bundled link as a unit of transmission medium and producing a second database,

said interface units translating header of said data packet according to said first and second databases.

34. The router of claim 33, wherein the routing controller creates said first database by mapping a plurality of bundled links to a plurality of component links and downloads the first database to said interface units, and creates said second database by mapping a plurality of destination addresses to a plurality of bundled links and downloads the second database to said interface units, wherein each of said interface units translates header of said data packet according to said downloaded first and second databases and transmits the header-translated data packet to said switch.

35. The router of claim 33, wherein said routing controller creates said first database in a learning process based on contents of the exchanged hello packets.

36. The router of claim 33, wherein said routing controller groups said parallel component links into a plurality of bundled links corresponding to different ones of said plurality of routers.

37. The router of claim 33, wherein the routing controller groups the parallel component links into a plurality of bundled links corresponding to a plurality of different bandwidths.

38. The router of claim 33, wherein the routing controller groups the parallel component links into a plurality of bundled links corresponding to a plurality of different management groups.

39. The router of claim 33, wherein the routing controller groups the parallel component links into a plurality of bundled links corresponding to a plurality of different link priorities.

40. The router of claim 33, wherein the routing controller groups the parallel component links into a plurality of bundled links corresponding to a plurality of different light wavelengths.

41. The router of claim 33, wherein the routing controller monitors status of said parallel component links and groups said parallel component links into said bundled link when there is a significant change in the monitored status.

42. The router of claim 33, wherein the routing controller groups said parallel component links into said bundled link according to a total bandwidth of the bundled link and defines a bundled link state according to the total bandwidth, and performs said routing calculations according to the bundled link state and said total bandwidth of the bundled link.

43. The router of claim 33, wherein said bundled link is uniquely assigned an interface IP (internet protocol) address, and wherein said hello packets contain said interface IP address to all neighbor nodes to exchange interface IP addresses.

44. The router of claim 33, wherein said first database contains a router identifier identifying a neighbor router and a link identifier assigned by the neighbor router for identifying each of said parallel component links.

45. The router of claim 42, wherein said routing controller is arranged to:

increment a number of component links grouped into said bundled link in response to a link-up request,

increase said by an amount corresponding to a bandwidth of a component link requested by the link-up request,

decrement said number of component links in response to a link-down request,

decrease said by an amount corresponding to a bandwidth of a component link requested by the link-down request,

add a component link requested by the link-up request to said bundled link if the number of component links grouped into said bundled link is greater than zero, and

remove a component link requested by the link-down request from the bundled link if the number of component links grouped into the bundled link is equal to zero.

46. The router of claim 33, wherein the routing controller is arranged to:

transmit a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receive said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.